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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,919	07/31/2003	Huazhou Lou	169.12-0592	9621

164 7590 03/22/2005

KINNEY & LANGE, P.A.  
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MINNEAPOLIS, MN 55415-1002

EXAMINER
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TZENG, FRED

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/631,919

Applicant(s)

LOU ET AL.

Examiner

Fred Tzeng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/31/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-19 are presented for examination.

#### ***Specification***

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ottesen et al (USPN 6,608,727), hereafter as Ottesen.

RE claims 1 and 6, Ottesen discloses a magnetic data storage and retrieval system (see column 2 lines 23-24; the DASD 100), comprising: a rotatable magnetic disc having a readback signal stored over a section of the magnetic disc (see column 2

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lines 24-33; the disk 110 having readback signal  $r(t)$  stored therein); a transducing head for reading the readback signal from the magnetic disc, the transducing head being positioned to fly at a fly height with respect to the magnetic disc when the magnetic disc is rotating (see column 2 lines 23-33; the transducer head 112 for reading the readback signal  $r(t)$  from magnetic disk 110); and means for processing the readback signal to calculate a dynamic harmonic ratio as a function of time (see column 1 lines 41-51; the harmonic ratio is calculated over DFT components over readback signal  $r(t)$  as a function of time); means for calculating head media modulation as a function of time from the dynamic harmonic ratio (see column 1 lines 51-53; the calculated harmonic ratio is used for calculating/identifying tribology or head media modulation for a head/disk interface as a function of time).

RE claims 2 and 3, Ottesen discloses that the means for processing the readback signal to calculate a dynamic harmonic ratio includes forming sampling intervals and calculating a harmonic ratio measurement for each of the sampling intervals (see column 1 lines 44-51).

RE claim 4, Ottesen discloses that the means for processing the readback signal to calculate a dynamic harmonic ratio includes digitizing the readback signal using a 1GHz or faster sampling rate (see column 2 lines 49-65).

RE claims 5 and 7-9, Ottesen discloses means for determining a frequency spectrum of the dynamic harmonic ratio (see column 3 lines 26-67 and column 4 lines 1-12 and figures 2A & 2B).

RE claims 10-12, Ottesen discloses that the processing circuit calculates the harmonic ratio by dividing an instantaneous peak amplitude of a harmonic frequency of the readback signal by an instantaneous peak amplitude of a fundamental frequency of the readback signal (see figure 3; the step for calculating ratio).

Claims 13-19 are the method steps associated with the apparatus of claims 1-12 and therefore are rejected on the same basis as the apparatus claims.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Coker et al (USPN 5,168,413) teaches a method and apparatus for measuring and calculating the fly height changes based on the variations of the readback signals in real time. Ottesen et al (USPN 6,288,856) discloses real-time head-to-disk clearance measuring method and apparatus based on the acquired readback signal pulses width variations. Carlson et al (USPN 5,909,330) teaches a method and apparatus for detecting head flying height in a disk drive relying on variations in read signal resolution.

6. Any inquiry concerning this communication from the examiner should be directed to Fred Tzeng whose telephone number is 571-272-7565. The examiner can normally be reached on weekdays from 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 571-273-7565 for After Final communications.

7. Informal regarding the status of an application may be obtained from the Patent Application Information Retrieval (**PAIR**) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred F. Tzeng

March 16, 2005



DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
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